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TITLE: Synergistic, broad-spectrum herbicidal composition for pre- o
post-emergence control of weeds in crops, especially maize

INVENTOR: RUEEGG, W

PRIORITY-DATA: 1998CH-0001373 (June 26, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200000031 A1	January 6, 2000	G	061	A01N043/80
AU 9947768 A	January 17, 2000		000	A01N043/80
EP 1089628 A1	April 11, 2001	G	000	A01N043/80

INT-CL (IPC): A01N 43/80

ABSTRACTED-PUB-NO: WO 200000031A

BASIC-ABSTRACT:

NOVELTY - Synergistic herbicidal composition contains as active agen
mixture of
5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3--
(methylthio or methylsulfinyl)-isoxazole (I) with one or more of 32
categories of other herbicides and/or one or more of 11 specific
safeners.

DETAILED DESCRIPTION - Herbicidal composition contains (apart from
conventional formulation auxiliaries) an active agent mixture of:

(A)
5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3-(methy
hio or methylsulfinyl)-isoxazole (I) with

(B) a synergistic amount of one or more herbicides and/or

(C) a herbicide-antagonist amount of one or more safeners.

(B) are selected from:

(i) chloroacetanilides of formula (II);

- (ii) N-(2,4-dimethyl-3-thienyl)-N-(1-methoxy-2-propyl)-chloroacetami (specifically as the (S)-isomer);
- (iii) s-triazines of formula (III);
- (iv) cyclohexanediones of formula (IV);
- (v) fused triazoles of formula (V);
- (vi) 6-chloro-4-(hydroxy or n-octylthio-carbonyloxy)-3-phenyl-pyridazine;
- (vii) bromoxynil or ioxynil;
- (viii) 2-(2-(chloro or nitro)-4-methylsulfonyl-benzoyl)-cyclohexane-1,3-di- one;
- (ix) triazolones of formula (VI);
- (x) 5-cyclopropyl-4-(2-methylsulfonyl-4-(chloro or trifluoromethyl)-benzoy- l)-isoxazole;
- (xi) glufosinate-ammonium (specifically as the (S)-isomer);
- (xii) sulfonyl ureas of formula (VII) or their sodium salts;
- (xiii) mebutrizin;
- (xiv) aclonifen;
- (xv) glyphosate;
- (xvi) bentazone;
- (xvii) pendimethalin;
- (xviii) dicamba;
- (xix) S-ethyl diisobutylthiocarbamate (butylate);
- (xx) 3-(3-(2-(allyloxycarbonyl)-2-propyloxycarbonyl)-4-chlorophenyl)-2,4- ioxo-1-methyl-1,2,3,4-tetrahydro-6-trifluoromethyl-pyrimidine;
- (xxi) clomazone;
- (xxii) (2,4-dichlorophenoxy)acetic acid (2,4-D);
- (xxiii) flumiclorac;
- (xxiv) fluthiacet-methyl;
- (xxv) flurtamone;
- (xxvi) flumioxazin;
- (xxvii) paraquat;

(xxviii) azafenidin;
(xxix) fluthiamide;
(xxx) fentrazamide;
(xxxi) isopropazol and
(xxxii) sulfosate.

The safeners (C) are selected from benoxacor, fenclorim, cloquintoc
~~mefenpyr-diethyl~~, furilazol, 4-carboxy-4-carboxymethyl-chroman,
pyrrolo-pyrimidine derivative of formula (VIII), fluxofenim,
dichlormid, flurazole and MON 4460.

n = 0 or 1;

R4 = Me or Et;

R5 = -CH(Me)CH₂OMe (specifically as the (S)-isomer), CH₂OMe or CH₂OE

R7 = Cl or SMe;

R9 = Et, isopropyl or tert. butyl;

R10 = Et or n-propyl;

R11 = COO(1/2Ca), CH₂CH(Me)SEt or tetrahydropyran-4-yl;

X = O, NOEt or NOCH₂CH=CHCl;

R12 = H, OMe or OEt;

R13 = Me, OMe or F;

R14 = COOMe, F or Cl;

R15 = H or Me;

Y, Z' = N or CH;

R16, R20 = F or Cl;

R21 = CH₂CH(Cl)COOEt or NHSO₂Me;

Y1 = N, CH or N(Me);

Y2 = N, CH or Cl;

Y3, Y4 = CH, or together = S or C-Cl;

Y5 = N or CH;

Y6 = Me or OMe and

R24 = CONMe₂, COOMe, CH₂CH₂F or SO₂Et.

ACTIVITY - Herbicidal.

In post-emergence tests against Digitaria, the herbicidal effect was % for 150 g/ha of 5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3-methylthio-isoxazole (Ia), 25 % for 100 g/ha of halosulfuron and 90% (compared with a calculated value of 81%) for a combination of 1 g/ha (Ia) and 100 g/ha halosulfuron.

MECHANISM OF ACTION - None given.

USE - For selective control of weeds in crops (claimed), e.g. cereal cotton, soya, sugar beet, sugar cane, plantation crops, rape, rice or especially maize (claimed). The compositions are effective against both mono- and dicotyledonous weeds, e.g. Stellaria, Nasturtium, Agrostis, Digitaria, Avena, Setaria, Sinapis, Lolium, Solanum, Phaseolus, Echinochloa, Scirpus, Monochoria, Sagittaria, Bromus, Alopecurus, Sorghum halepense, Rottboellia, Cyperus, Abutilon, Sida, Xanthium, Amaranthus, Chenopodium, Ipomoea, Chrysanthemum, Galium, Viola and Veronica.

ADVANTAGE - Combinations of (A) (known herbicides described in WO9743270) and (B) and/or (C) have synergistic pre- and post-emergent herbicidal activity against a broad spectrum of weeds occurring in crops, allowing use at lower application rates. The presence of (C) also inhibits phytotoxicity to crops. Compared with (A) alone the compositions have a broader herbicidal spectrum and higher selectivity in crops.